FOCUS

Reporting on innovative products and strategies for building better, safer roads • June/July 1999

Pavement Smoothness Tips from the King of the Asphalt Oval

As the most successful race car driver in NASCAR (National Association for Stock Car Auto Racing) history, Richard Petty is known as the king of the asphalt oval. Now, as star of a new Federal Highway Administration (FHWA) videotape, *Smoother Pavements: Highways Fit for a King,* he's headlining a campaign to achieve smoother asphalt pavements nationwide.

Developed by FHWA's Western Resource Center, in cooperation with the Arizona Department of Transportation (DOT), the video describes Arizona DOT's pavement smoothness program. Under the program, the State inserts a smoothness clause into highway contracts, which provides incentive payments for pavements that meet a specified standard of smoothness.

"After several contracts with the smoothness clause had been completed," says Jim Delton of Arizona DOT, "we were able to show contractors that they could obtain significant incentive payments by using the new technologies and equipment available today." Some contractors have earned as much as $280,000 in incentive payments. "We consider that money well spent because we're getting much better final smoothness levels than we ever achieved in the past," says Delton. And in an unexpected bonus, some contractors are reducing their up-front bid price, with the expectation of earning an incentive later.

Arizona DOT and its contractors have found that the simplest, least expensive way to improve pavement smoothness is to maintain a more continuous, uninterrupted paving process instead of stopping and starting, which can result in bumps in the mat. For example, crews should make sure that the paving machine always has hot mix in front of it, so that there's no need to stop and wait for another load. Smoothness can also be improved by making sure that the steel wheeled rollers are clean, track straight, and stay on the mat. If the roller is not 100 percent on the mat, it could pick up material on the edge of the roadway and transfer it to the new surface. And while improving paving operations is key to achieving smoother pavements, the asphalt plant also has an important role, keeping the temperature of the hot mix as consistent as possible and preventing mix segregation.

By introducing the smoothness specification, "we have changed the state of the art," says Delton. "The smoothness specification encourages innovation and quality work from contractors."

The video was originally slated for distribution only in western States, but FHWA's new national focus on improving pavement smoothness means that distribution has broadened to include transportation departments and contractors across the country, as well as such organizations as the National Asphalt Pavement Association.

To obtain a copy of the video, contact John Cagle at FHWA, 415-744-2613 (fax: 415-744-2620; email: john.cagle@fhwa.dot.gov). For information on pavement smoothness specifications, contact George Jones at FHWA, 202-366-1554 (fax: 202-366-9981; email: george.jones@fhwa.dot.gov). ▼

Inside...

U.S. Department of Transportation

Federal Highway Administration

Superpave in the Classroom

In the future, engineers entering the workforce will be better prepared to tackle asphalt paving design and construction projects, as they will have been taught the Superpave system.

New course materials developed by the Federal Highway Administration (FHWA), through a contract with the National Center for Asphalt Technology, are now being used to introduce the Superpave mix design system and provide a basic understanding of asphalt technology to sophomores and juniors in civil engineering programs. The materials can be used as either a supplement to existing undergraduate courses on materials and pavements or as a stand-alone segment of the course curriculum. Until now, information on the Superpave system has been covered in some undergraduate engineering courses, but on an ad hoc basis, with no standard curriculum.

The materials can be used as either a supplement to existing undergraduate courses on materials and pavements or as a stand-alone segment of the course curriculum.

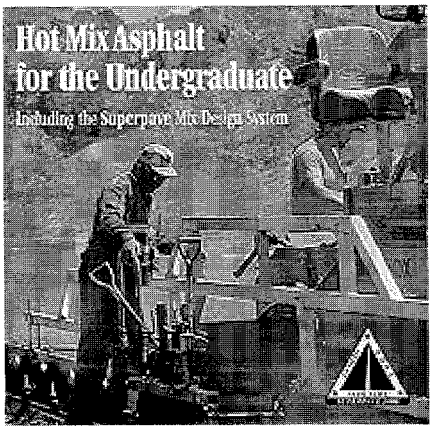
The development of the materials was prompted by an Indiana initiative to provide Superpave training to undergraduates in the State. In addition to spearheading the development of the national curriculum, the project included holding a training course to bring professors up to speed on the Superpave system and equipping five universities with Superpave laboratory equipment. The Indiana initiative was followed by one in Florida, generating interest both across the country and internationally.

"Introducing the Superpave system to undergraduates will benefit the entire highway community for years to come," says Lee Gallivan of FHWA's Indiana Division and manager of the curriculum project.

Contained on a CD-ROM, the materials consist of two 50-minute lectures for sophomores and twelve 50-minute lectures for juniors. The class lectures are in PowerPoint format and include instructor's notes, a laboratory instructor's guide, a student workbook, and homework problems.

A curriculum for senior-level courses is planned but has not yet begun, because of funding limitations under the Transportation Equity Act for the 21st Century. Gallivan says, however, that he is hopeful that, "after the current materials are distributed and FHWA gets feedback from users, FHWA can find the necessary funding to complete the project."

Copies of the CD-ROM are being



distributed to the FHWA technology transfer centers, Superpave centers, FHWA headquarters and field offices, members of the American Association of State Highway and Transportation Officials Subcommittee on Materials, and various industry groups. The FHWA field offices will distribute the materials within their States and coordinate the introduction of the undergraduate course work at universities in their regions.

The CD-ROM (Publication No. FHWA-RD-99-073) is also available through the FHWA Research and Technology Report Center (phone: 301-577-0818; fax: 301-577-1421), or can be downloaded from the FHWA Web site (www.fhwa.dot.gov/asphtech.htm).

For more information, contact Lee Gallivan at 317-226-7493 (fax: 317-226-7341; email: victor.gallivan@fhwa.dot.gov).

NOTICE ANYTHING DIFFERENT?

You might have noticed that the first page of this issue of *Focus* looks a little different. The Strategic Highway Research Program (SHRP) logo no longer graces the page, and we've changed the tag line to read, "Reporting on innovative products and strategies for building better, safer roads."

Don't worry; we'll continue to bring you news of SHRP products and implementation activities. But as we promised you in the September 1998 issue, we have broadened the newsletter's coverage to include many of the other technologies that compose the research and technology program outlined in the Transportation Equity Act for the 21st Century (TEA-21). Articles will primarily cover infrastructure and operations topics (the top rated areas in our reader survey; see page 6).

As always, we welcome your comments and suggestions. Please send them to: Focus, Harrington-Hughes & Associates Inc., 733 15th St., N.W., Suite 700, Washington, DC 20005, Fax: 202-347-6938.

Outstanding in the Field: Lead States Pavement Maintenance Demos

New machines and materials, however promising, can be risky for highway agencies. After all, until an agency actually tries it out, there's no knowing how well it will serve the agency's needs or be received by its staff. To give State and local agencies a hands-on look at new pavement maintenance techniques and materials, the Lead States team for innovative pavement maintenance materials is conducting, for the second year, a series of field demonstrations.

Field demonstrations give agencies with limited budgets the confidence to invest in innovation. "It's one thing to look at glossy cover shots," said Lee Smithson of the Iowa Department of Transportation (DOT) and the Lead States team leader. "But it's another to put a machine into the field where people who know how to use it work shoulder-to-shoulder with people who are interested in knowing. And we try to hold these events as near as possible to State borders so that other States with limited budgets can also send people."

On April 18-19, the Lead States team held a field demonstration at an exposition in Ames, Iowa. The event offered nearly 900 people from the Iowa DOT, county and city agencies, and other States the chance to see what Smithson called "field demos put on by people who actually use the products and procedures." After an afternoon of classes covering everything from excavation safety to mowing and herbicides, the participants moved outside the next morning to look at innovative pavement maintenance techniques and materials, including spa11 patching, pothole patching, and crack and joint sealing. As John Selmer of Iowa DOT and a Lead States team member notes, the demo focused on "meeting the needs of the equipment users."

> "It's one thing to look at glossy cover shots, but it's another to put a machine into the field where people who know how to use it work shoulder-to-shoulder with people who are interested in knowing."

An April field demonstration held by the Lead States team for innovative pavement maintenance in Boise, Idaho, highlighted use of the velocity-fill pothole patcher.

A second field demonstration was held in Boise, Idaho, on April 29. Participants from Idaho, Oregon, and Washington State traveled to the Western Idaho Fairgrounds, where they spent the morning in classes and the afternoon in the field. Focused on pavements, this event promoted early preventive maintenance strategies.

Organizers "encouraged participants to consider alternatives to standard seal coats and chip coats, such as slurry seals and microseals," says Clayton Sullivan of Idaho DOT and a member of the Lead States team. Slurry seals, which had been proven effective by the Strategic Highway Research Program (SHRP), require no rolling and create no dust. Microseals, brought from Europe especially for use in filling wheel ruts, offer the advantage of rapid setting, often allowing traffic to return within 1 hour after application. Other products featured included a SHRP-evaluated two-part polymer for concrete pavement repair and a cost-effective treatment for sealing cracks in asphalt pavement. "People tend not to seal cracks correctly," said Sullivan, "and we demonstrated to them how to do it."

Both events highlighted velocity-fill pothole patchers, automated devices that propel aggregate and asphalt through a hose at high velocity and compact patches without using a compactor. These automated pothole patchers were also found highly effective and efficient by SHRI?

continued on page 4 3

PAVEMENT DEMOS, *continued from page 3*

The field demonstrations, said Smithson, are "win-win situations. The vendors can demonstrate their products in the field, State champions can demonstrate technologies to other agencies, and learners benefit most of all. This is effective technology transfer."

A third Lead States field demonstration was held in southeastern Pennsylvania on May 12. Approximately 60 people from Pennsylvania, Delaware, Maryland, and New Jersey gathered in Concordville, Pennsylvania, to see pavement maintenance equipment demonstrations by both users and vendors. Attendees included State highway agency personnel, city and county highway workers, engineering consultants, and equipment vendors and contractors. The City of Philadelphia demonstrated its portable pothole recycling equipment, while Delaware DOT operated its velocity spray injection pothole patcher and Pennsylvania DOT brought in a crew from Lancaster County to demonstrate its pothole repair machine. In addition, two manufacturers demonstrated the latest in crack sealing/filling equipment.

"Bringing technology in action to the people who need it was a huge success," says Joseph Huerta of FHWA. "There were many enthusiastic recommendations that similar workshops be held." As a result, Pennsylvania DOT and FHWA are planning to hold another demonstration this fall.

For more information on the field demonstrations or the Lead States team on innovative pavement maintenance materials, contact John Selmer at Iowa DOT (phone: 515-239-1589; fax: 515-239-1005; email: jselmer@max.state.ia.us), Clayton Sullivan at Idaho DOT (phone: 208-334-8405; fax: 208-334-8595; email: csulliva@itd.state.id.us), or Don Wise, Pennsylvania DOT (phone: 717-787-6226; fax: 717-705-5520). ▼

On the Road Again: Western Maintenance Tour

You can learn a lot from reports and newsletters, but nothing beats firsthand experience. At least that's the consensus of a group of western State and Federal maintenance engineers who have been taking to the road once a year for the past 3 years to see how different States apply and manage preventive and general maintenance programs.

Utah was last year's destination. The tour started in Salt Lake City, with a series of presentations on a range of maintenance topics, including snow removal on Interstate 15, which is currently undergoing a major reconstruction, and maintenance management quality assurance. The members of the group then climbed aboard a 40-passenger bus for a 2-day, 600-mile tour of a variety of maintenance projects, including maintenance paving operations, road weather information systems, and a rotomill. The bus, which served as a rolling office, provided ample opportunity for discussion and debate. The costs of the tour were shared by the participating States and the Federal Highway Administration (FHWA).

"If FHWA preserves one thing," says tour member Lynn Millard of the Utah Department of Transportation (DOT), "it should be these small-group State tours. The information exchanged and the discussions about how others are solving problems similar to our own are invaluable."

John Blacker, a tour participant from Montana DOT, agrees. "The camaraderie leads to an informal support network. When faced with a problem, you know who to call-who has already handled something similar. This keeps us from wasting tax dollars on reinventing the wheel. We remove the barriers that customarily exist at the State line."

Besides encouraging cooperation among neighboring States, the tours spur conversation between staff in the State DOTs and FHWA. "TEA-21 [the Transportation Equity Act for the 21st Century] means that the Federal government has much more flexibility in dealing with maintenance issues," says Blacker. "These tours give us a chance to readily share information with our Federal counterparts."

The Utah DOT tour highlighted a number of innovative programs, processes, and projects for striping pavements, removing litter, coating pavements, fencing Interstates to prevent deer from straying onto the roadway, and applying anti-icing strategies.

Montana is slated for the 1999 tour, which is tentatively scheduled for September. Featured projects include crack sealing, thin-lift overlays, and get-ready-quick contracts. Prior years' tours have included Colorado in 1996 and a 1997 tour of South Dakota that visited a long-term pavement performance (LTPP) program specific pavement study experiment (SPS-4, preventive maintenance effectiveness for rigid pavements) site in Vermillion. In a departure from past practice, Blacker hopes to invite participants from other parts of the country to Montana in September.

For more information, contact John Blacker at Montana DOT (phone: 406-444-6158; fax: 406-444-7684; email: jblacker@state.mt.us) or Lynn Millard at Utah DOT (phone: 801-965-4898; fax: 801-965-4769; email: lmillard@dot.state.ut.us). ▼

Strong Grassroots Support for LTPP Program Yields Increase in Data

Staff from the Federal Highway Adminstration (FHWA) took to the road recently to seek resolution to the issue of missing or questionable data from long-term pavement performance (LTPP) test sections. The result: a substantial increase in the amount of data available for study. The data resolution effort has contributed, for example, to a 41 percent increase in weigh-in-motion data and a 34 percent increase in falling weight deflectometer data.

This data resolution effort had its roots in a resolution issued in 1997 by the American Association of State Highway and Transportation Officials (AASHTO) Standing Committee on Highways (SCOH), which called on FHWA and the States to address any missing or questionable LTPP data.

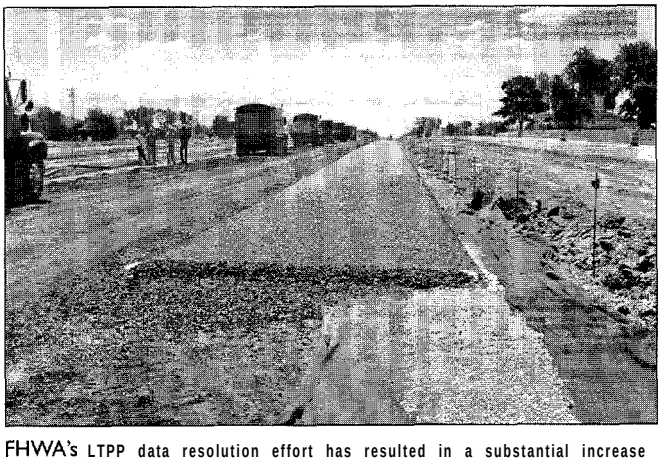
Because having complete data from a broad sample of test sections over a long time span is essential to the success of the LTPP program, the goal of the data resolution process has been to obtain complete data sets from as many of the test sections as possible. Throughout the summer of 1998, FHWA staff and the LTPP regional coordinators met individually with each State and Canadian Province to determine the completeness and quality of data collected to date and to agree on what to do about missing or questionable data.

Throughout the meetings, Monte Symons of FHWA found strong grassroots support for the LTPP program. "The data collection process," he says, "is moving forward. The DOTs are really stepping up to the plate."

Gary D. Taylor, chief engineer of the Michigan Department of Transportation (DOT), presented a report on the status of the LTPP data resolution effort at the April 1999 SCOH meeting. While overall the effort has been a great success, a shortfall still exists in the areas of monitored traffic volume and weight data for the specific pavement study (SPS) sections. A strategy to address this shortfall is being developed. At the meeting, Taylor also encouraged States to follow through with their commitments to the LTPP program.

The LTPP data will be used to adjust the monitoring schedule for the test sites. The adjustments will be based on levels of data completeness, mutually agreed upon modifications to the frequency of monitoring, and commitments to the level of effort required of States, Provinces, and LTPP staff. The revised monitoring schedules will take effect in September.

For more information, contact Monte Symons at FHWA (phone: 202-493-3144; fax: 202-493-3161; email: monte.symons@fhwa.dot.gov).



FHWA's LTPP data resolution effort has resulted in a substantial increase in the amount of data from specific pavement study (SPS) sections and other test sites. Here, an SPS site in Delaware County, Ohio, is shown.

LTPP Program: In Print and on the Web

Three new publications and a revamped Web site make keeping up with the latest findings in the long-term pavement performance (LTPP) program easier than ever.

Three new Product Briefs are now available:

- *DataPave: User-Friendly Access to LTPP Data* (Publication No. FHWA-RD-99-051);
- *LTPPBind: A New Tool for Selecting* Cost-Effective *Superpave Asphalt Binder Performance Grades* (Publication No. FHWA-RD-99-082); and
- *Rigid Pavement Design Software: A New Tool for Improved Rigid Pavement Design* (Publication No. FHWA-RD-99-129).

The briefs can be found on the LTPP Web site (tfhrc.gov/pavement/ltpp/library.htm), or copies can be ordered from the FHWA Research and Technology Report Center (phone: 301-577-0818; fax: 301-577-1421).

Later this year, the LTPP program plans to launch a series of Application Notes, which will detail how State and provincial highway agencies are using results from the LTPP research in their day-to-day operations.

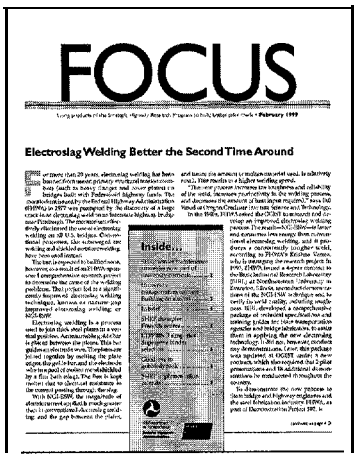
The redesigned LTPP Web site (tfhrc.gov/pavement/ltpp/ltpp.htm) features several new sections, including a library with an annotated bibliography of LTPP research reports and other documents; a products section where users can download the LTPPBind software or get information on the DataPave software; a "Who's Who" of LTPP staff; and a calendar of upcoming meetings, workshops, and other events. The "What's New" section contains the most up-to-date program news.

For more information on the LTPP program, contact Charlie Churilla at FHWA, 202-493-3143 (fax: 202-493-3161; email: charles.churilla@fhwa.dot.gov).

The Results Are In...

If you are one of the almost 1300 readers who responded to the recent Focus survey, thank you. The survey, the first ever conducted of Focus readers, will help us ensure that your needs for timely, relevant information continue to be met. Here's a brief summary of what we learned.

- The most popular topics are the Superpave system, pavement preservation, and the long-term pavement performance (LTPP) program.
- As a result of articles in FOCUS, most readers have used or requested more information on one or more Strategic Highway Research Program (SHRP) products, been better prepared to bid on highway projects, or modified their agency's standard procedures.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Electroslag Welding Better the Second Time Around

Inside...

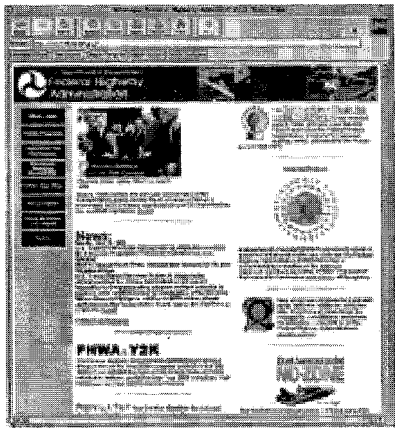
- Readers overwhelmingly prefer reports on how State and local governments are actually using SHRP products and updates on new developments in SHRP products.
- The most frequently cited areas to be emphasized were infrastructure and operations.
- More than half of the respondents work in State (27 percent), Federal (7 percent), and local (21 percent) agencies.
- Although readers like the fact that back issues of Focus are archived on the Web (www.ota.fhwa.dot.gov/pubs/index.html), 98 percent prefer receiving *Focus* in the mail.
- Most readers describe themselves as managers or technical experts.
- The technical content of *Focus* articles is "about right," said 86 percent of respondents.

These survey results provide a valuable snapshot of our readers. As we expand our coverage beyond SHRP to include other topics in infrastructure and operations, that snapshot will help keep us focused on your needs and expectations. And, of course, we welcome your comments and suggestions anytime.

For more information about the survey, contact Lisa Pope at Harrington-Hughes & Associates, 202-347-1448 (fax: 202-347-6938; email: lgpope@harrington-hughes.corn).

FHWA ONLINE

In search of FHWA news and information? Visit the FHWA home page at www.fhwa.dot.gov/. At the site, you can find updates on everything from TEA-21 implementation to Y2K compliancy efforts to FHWA's 1999 environmental excellence award winners. Visitors can also find information on FHWA programs and transportation-related legislation and regulations, as well as links to other FHWA Web sites.



SHRP Implementation Calendar

The following events are in support of products and technologies developed under the Strategic Highway Research Program.

FHWA Regional HPC Showcase
June 29-July 1, 1999, Auburn, AL

This high-performance concrete for bridges showcase highlights bridges under construction in Alabama, North Carolina, and Georgia.

Contact: Terry Halkyard at FHWA, 202-366-6765 (fax: 202-366-7909; email: terry.halkyard@fhwa.dot.gov) or Michael Stallings at Auburn University, 334-844-6276 (fax: 334-844-6290; email: michaels@eng.auburn.edu).

AASHTO Task Force on SHRP Implementation Meeting
July 22, 1999, Indianapolis, IN

Contact: Jason Harrington at FHWA, 202-366-1576 (fax: 202-366-9981; email: k.jason.harrington@fhwa.dot.gov).

Lead States Workshop
August 30-31, 1999, St. Louis, MO

Contact: Haleem Tahir at AASHTO, 301-975-5275 (fax: 301-330-1956; email: haleem.tahir@nist.gov).

Fourth Annual Eastern Winter Road Maintenance Symposium and Equipment Expo
September 8–9, 1999, Albany, NY

The symposium and accompanying equipment expo are targeted at winter maintenance managers and other public works practitioners from cities, townships, counties, and States east of the Mississippi River, as well as staff from other public agencies and the private sector. The symposium will cover such topics as snow and ice control, road weather information systems, anti-icing techniques, and post-storm cleanup strategies: It is being cohosted by the New York State Department of Transportation and the Federal Highway Administration (FHWA).

Contact: Deborah Vocke at FHWA, 410-962-0077, x. 3078 (fax: 410-962-3419; email: deborah.vocke@fhwa.dot.gov).

International Conference on Accelerated Pavement Testing
October 18–20, 1999, Reno, NV

The conference will provide a forum for the exchange of technical information on accelerated pavement testing, with an emphasis on techniques for predicting pavement performance, equipment development, and pavement instrumentation. The conference will also feature reports on research projects in Australia, China, Denmark, Holland;. New Zealand, and South Africa, among other countries.

Contact: Maria Ardila-Coulson at the University of Nevada-Reno, 775-784-1429 (fax: 775-784-1429; email: maria@unr.edu; Web: coeweb.engr.unr.edu / ce / t2 / conference /).

Superpave: Building Roads for the 21st Century
April 10–12, 2000, Denver, CO

Sponsored by the Asphalt Institute and the Federal Highway Administration, this conference is a follow-up to the 1998 "Superpave: Today and Tomorrow" forum in St. Louis, MO. Sessions will focus on materials, design and production, construction and quality control/ quality assurance, and performance. Practitioners experienced in the use of the Superpave system will present their findings and share their experiences.

Contact: Paige Anderson at the Asphalt Institute, 606-288-4964 (fax: 606-288-4999; Web: www.asphaltinstitute.org).

Asphalt Technology 2000
December 10–13, 2000, Austin, TX

The conference is designed to provide a forum for transportation professionals and industry representatives to share information on practical engineering solutions to pavement problems. Topics covered will include specifications, pavement maintenance, and state-of-the-art technology.

Contact: Sharon Campos at the University of Texas at Austin, 512-471-3396; fax: 512-471-0831; email: scampos@mail.utexas.edu).

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Focus is a vehicle for promoting SHRP products and other highway technologies that FHWA and States are using to build better, safer roads. The Strategic Highway Research Program (SHRP) was established by Congress in 1987 as a 5-year, $150 million research program to improve the performance and durability of our Nation's highways and to make them safer for motorists and highway workers. As a follow-on to SHRP, Congress provided funding in the Intermodal Surface Transportation Efficiency Act of 1991 to implement SHRP products and to continue SHRP's long-term pavement performance (LTPP) program. While the 1998 Transportation Equity Act for the 21st Century did not specifically allocate any money for SHRP initiatives, FHWA remains committed to the continued implementation of SHRP products.

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